- Is the electrical power available on the top floors of both the John Hancock Center and Sears Tower? Considerable expense will have to be born by each applicant to bring power risers from the basement substation to the top floors to operate the ATV transmitters. With the recent flood in the Chicago loop area it may take an extremely long time to bring additional power to these subbasement power vaults.

- Since the ERP levels will be higher, what effect will this have on the rooftop area as far as the non-ionizing radiation regulations, and will we continually have to reduce power or go off the air so that work can be done in the area of these new antennas? With this higher than expected peak power requirement, the smaller (in physical size) UHF antenna that we had expected to be able to use during our last discussion probably will not be able to be realized, therefore requiring significantly more aperture space where very little is available.

One scenario that was discussed at some length would be if in the initial application we installed lower power transmitters and a cardioid antenna pattern (coverage of Lake Michigan and Southern Michigan not being essential) and not try to duplicate the NTSC coverage with the new ATV service. Then at a later date combine some NTSC channels into a singular antenna and later remove those antennas to make room for the installation of a normal power ATV antenna that could also be an antenna with more than one channel being fed into it. At the end of the period when the NTSC service would be decommissioned there would probably be enough room for all the required antennas.

This approach would get you on the air with the ATV service using low power transmitters and antennas. What it would not do is give you coverage in the areas where the more affluent consumer lives and who initially would be purchasing the ATV television receivers.

On the subject of alternate structures:

- During our first meeting there was discussion of contacting the real estate development firm of Miglin-Beitler who were planning to start construction of a very tall building in the loop area. However, because of the depressed economy and the glut of empty office space available for rent it is doubtful this building will be built in the near future, if at all. It currently has no funding.

- No other tall building is planned for the next two decades.

- A building designed to accommodate television stations at an expected cost of $1 - 1.5 billion would require significant financial commitment on the part of the broadcasters.

- A conventional, self supporting tall tower is very unlikely due to safety and land costs. A 2,000 foot CN (Toronto) type tower would likely cost $30-$50 million plus technical equipment and land. Local politics would figure seriously into such a request. The FAA says little if any air-space is available but they will study the question.

- Very few buildings currently exist unless we re-populate former transmission sites with new towers as existed at 1000 North Lake Shore Drive and Marina City. Shadowing would be severe due to numerous taller buildings to the south, and ghosting would be a severe problem to the north.

Any such project would likely take five to ten years from agreement between stations to project completion. With current excess of office space it is unlikely that any developer would build a tall building just to accommodate television stations.

I wish this report could be more optimistic, however broadcasting in a large metropolitan area and leasing transmitter and antenna space in tall buildings does not enable broadcasters to control their own destinies. When these lengthy negotiations began, I am sure that the timetable to get on the air with the new ATV service was overly optimistic.

Respectfully submitted,

Larry W. Ocker
Chair

Attachments: exhibits 1 thru 3

cc: Attendance
Thomas Powers/WMAQ
Don Rhodes/WYCC

EXHIBIT ONE

Attendance

Mr. Dana Baifus
Chief Engineer
WEHS - Channel 60
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tel: 312/829-8860

Mr. Norman Block
Chief Engineer
WCFC - Channel 38
38 South Peoria
Chicago, IL 60607
tel: 312/433-3838

Mr. Mike Bock
Manager Engineering
WMAQ - Channel 5
454 North Columbus Drive
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tel: 312/836-5514

Ms. Lolly Crofton
Assistant to Sr VP Engineering
WTTW - Channel 11
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tel: 312/509-5452

Mr. Seth Elliott
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Mr. Jerry Hanna
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Mr. Dave Haworth
Associate Director
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WBBM - Channel 2
630 North McClurg Court
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Mr. Bernard Hoelting
Chief Engineer
WCIU - Channel 26
141 West Jackson Boulevard
Chicago, IL 60604
tel: 312/663-0260

Mr. Chuck Jennings
Chief Engineer
WGBO - Channel 66
541 North Fairbanks Court
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tel: 312/751-6666

Mr. Bob Minor
Chief Engineer
WPWR - Channel 50
2151 North Elston Avenue
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tel: 312/276-5050

Mr. Mitch Montgomery
District Sales Manager
HARRIS CORPORATION
8418 NW Beech
Kansas City, MO 64153
tel: 816/891-7300

Mr. Larry Ocker
Sr VP Engineering
WTTW - Channel 11
5400 North St. Louis Avenue
Chicago, IL 60625
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Mr. James Owens
Director of Engineering
WLS - Channel 7
190 North State Street
Chicago, IL 60601
tel: 312/750-7777

Mr. Jerry Powell
RF Manager
WLS - Channel 7
190 North State Street
Chicago, IL 60601
tel: 312/750-7777

Attendance, cont.

Mr. Jim Rogers
Western Regional Sales Manager
COMARK
12612 Arabian Way
Poway, CA 92064
tel: 619/748-2151

Mr. Henry Ruh
Chief Engineer
WSNS - Channel 44
430 West Grant Place
Chicago, IL 60614
tel: 312/929-6615

Mr. Dwain Schoonover
Chief Engineer
WFLD - Channel 32
205 North Michigan Avenue
Chicago, IL 60601
tel: 312/565-5532

Mr. Garry Shultz
Assistant Chief Engineer
WGBO - Channel 66
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Chicago, IL 60611
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Mr. Craig Strom
Assistant Chief Engineer
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tel: 312/565-5532

Mr. Robert Strutzel
Engineering Director
WGN - Channel 9
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Mr. Franklin Swan
Transmitter Supervisor
WCFC - Channel 38
38 South Peoria
Chicago, IL 60607
tel: 312/433-3838

Mr. Kenneth Wilkey
Director of Engineering
& Operations
WBBM - Channel 2
630 North McClurg Court
Chicago, IL 60611
tel: 312/944-6000

EXHIBIT TWO

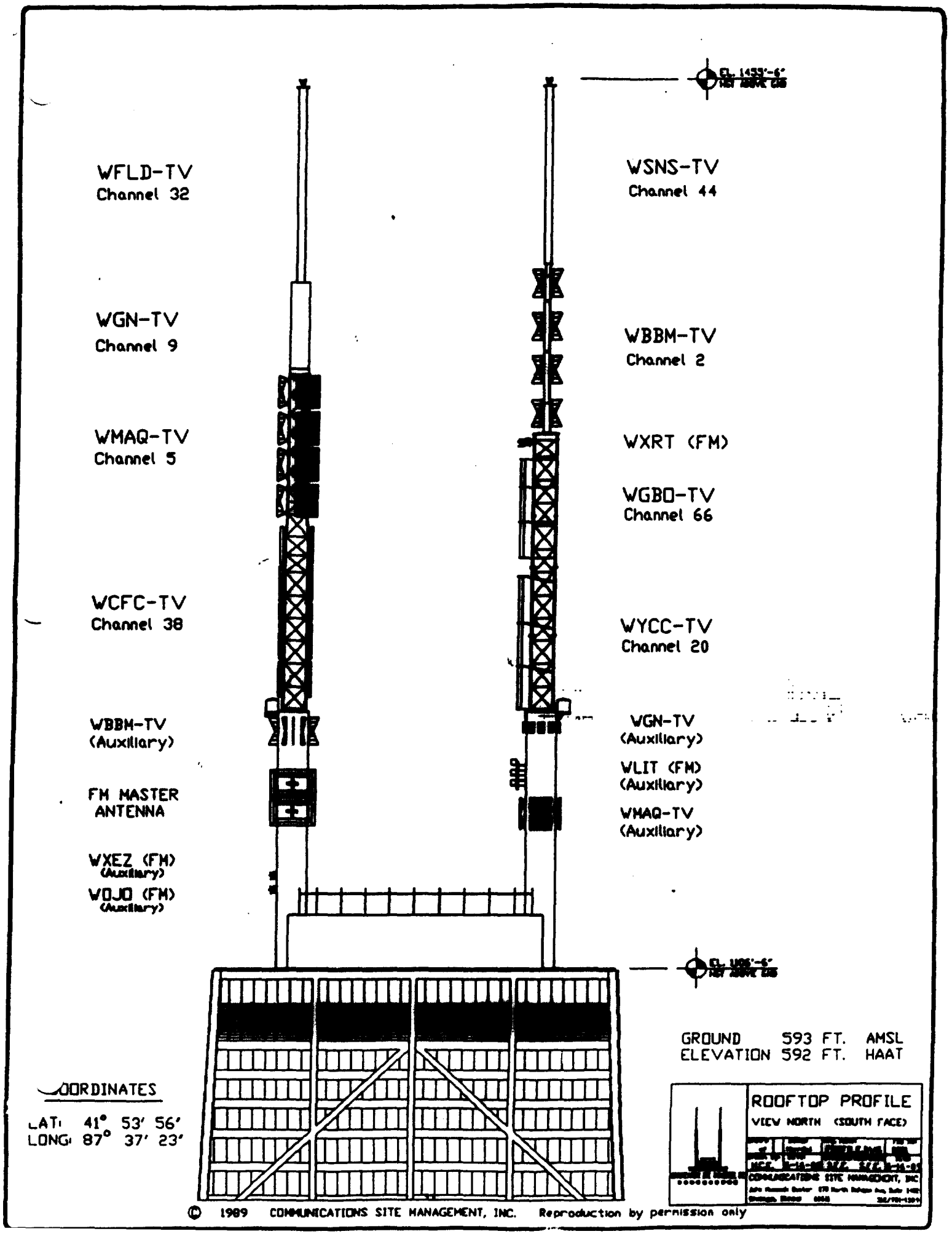
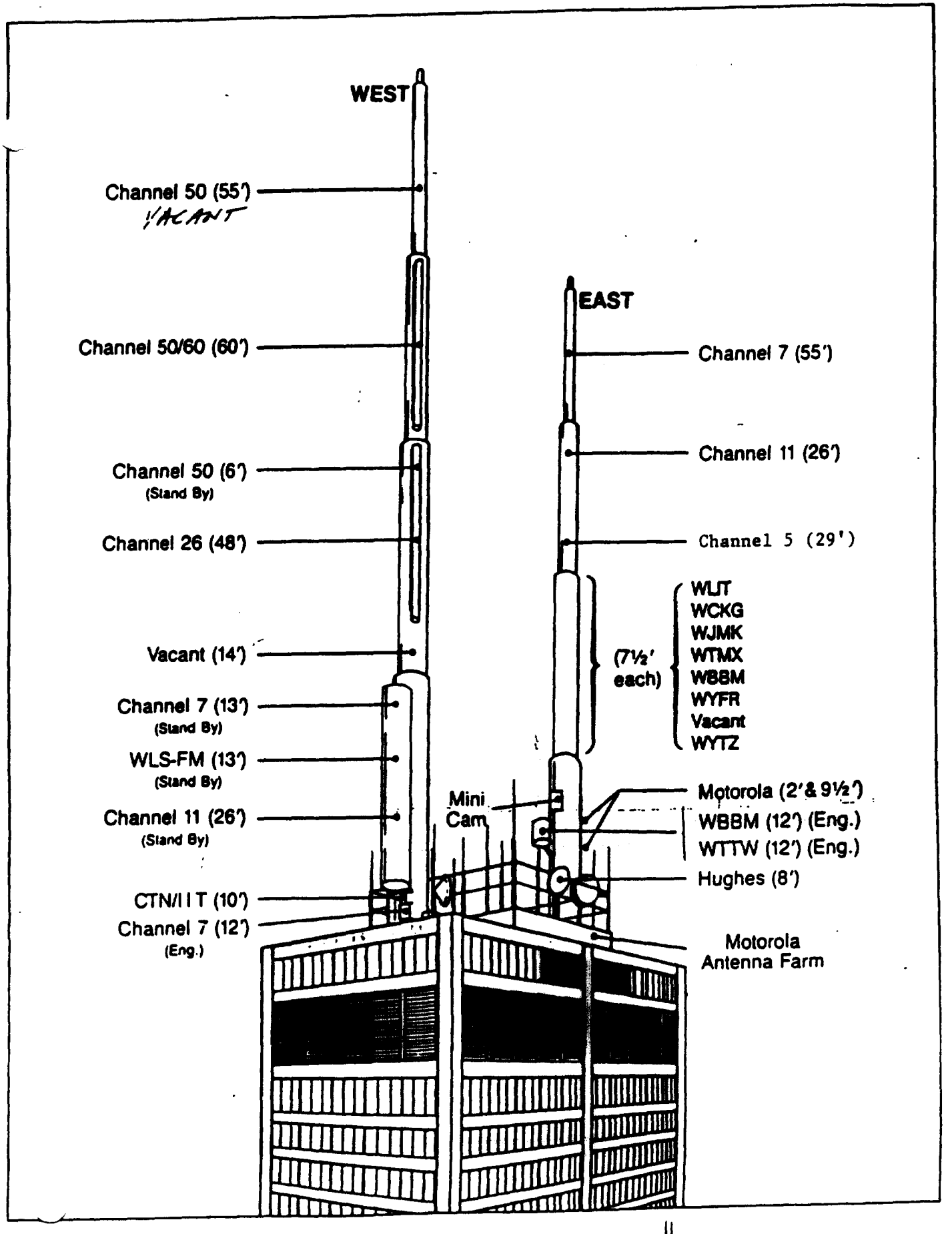


EXHIBIT THREE



Broadcast System Plan

TV BROADCASTERS ALL INDUSTRY COMMITTEE

NEW YORK, NY

WABC TELEVISION, INC. (WABC-TV)
SKYLINE LINCOLN SQUARE NY, NY 10023

CBS, INC. (WCBS-TV)
524 WEST 57th STREET, NY, NY 10019

EDUCATIONAL BROADCASTING CORP. (WNET)
356 WEST 58th STREET, NY, NY 10019

FOX TELEVISION STATIONS, INC. (WNYW)
205 EAST 67th STREET, NY, NY 10021

NATIONAL BROADCASTING COMPANY, INC. (WNBC-TV)
30 ROCKEFELLER PLAZA, NY, NY 10020

WWOR-TV
NINE BROADCAST PLAZA, SECAUCUS, NJ 07094

SPANISH INTERNATIONAL COMMUNICATIONS CORP. (WXTV)
94 MEADOWLAND PARKWAY, SECAUCUS, NJ 07094

WNYC COMMUNICATIONS GROUP (WNYC)
ONE CENTRE STREET, NY, NY 10007

WNJU-TV
47 INDUSTRIAL AVENUE, TETERBORO, NJ 07608

WPIX, INC.
220 EAST 42nd STREET, NY, NY 10017

EARL F. ARBUCKLE, P.E., PRESIDENT
WPIX (212) 210-2555

July 7, 1992

Mr. David Folsom
Director of Engineering
WCNC-TV
Providence Journal Broadcasting
1001 Woodridge Center Drive
Charlotte, NC 28217-1901

Dear Dave:

This letter is meant to serve as a brief status report on HDTV implementation issues which are likely to affect New York City metropolitan area broadcasters.

As you recall, the Television Broadcasters All-Industry Committee (TVAIC), consisting of the ten television stations transmitting from the World Trade Center, filed comments which appeared as a footnote to the Broadcast Consortium's response to the FCC's Notice of Proposed Rulemaking last January. In those comments, the TVAIC identified a number of aspects of the conversion to HDTV which seemed to make compliance with the FCC's proposed timetable difficult.

At the World Trade Center, existing antennas and transmission lines occupy the mast atop One World Trade Center fully. The upper portion of Two World Trade Center (the other one of the "twin" towers) is already reinforced in the same manner as the first. It would not be easy, but another mast *could* be erected atop Two World Trade Center. This solution, however, would further exacerbate the radiation issue. Special

antennas might make it possible to keep everything on the existing mast, by interleaving or multiplexing antennas between stations. Other problems at the Trade Center include the possible lack of space to accommodate more transmitters. AC power issues would need to be resolved to insure that sufficient electrical power could be brought to the top of the building.

Because all of the above issues require study from a perspective of extensive broadcast experience coupled with an appreciation for the requirements of the new HDTV technologies, the members of the TVAIC elected to retain Jules Cohen, a respected consulting engineer. Mr. Cohen is just now beginning his study on our behalf. His charter is to determine to what extent the World Trade Center will be able to meet the needs of HDTV implementation. The first report is expected sometime in August.

In the meantime, the TVAIC convened a meeting on April 8th, 1992 to thrash out more of the issues related to HDTV implementation. Attendees are listed in Appendix 1. A technical subcommittee, whose function will be to steer Jules Cohen along the path desired by the overall TVAIC, was selected. It consists of Joe Fedele (WCBS-TV), Jim Baker (WABC-TV), and Frank Graybill (WNET-TV). A spirited discussion was also held, where the two biggest concerns seem to be potential interference to existing NTSC broadcasts and the aggressive testing schedule, which might fail to identify the truly superior system.

Other specific concerns were as follows:

George Kraus of WNJU-TV felt that finding a suitable location for the HDTV transmitters would be the biggest issue.

Joe Fedele of WCBS-TV agreed.

Earl Arbuckle of WPIX-TV offered that the presence of the reinforced structural steel in Two World Trade Center might make it the most logical site and the tallest site that could readily be developed. Erection of a tall tower would be very complicated in the New York area.

George Kraus reminded the group of a "hard spot" on One World Trade, which might be able to support a stub mast and a limited number of HDTV antennas. He also mentioned that sites in or adjacent to the Hudson River had been explored back in the '60s when negotiations with the Empire State Building were taking place.

Everyone agreed that the Empire State Building is essentially unable to accommodate additional antennas due to structural loading.

Joe Fedele concluded that another tower site is needed.

Bob Barkey of WWOR-TV reminded the group that radiation is still a major issue which must be dealt with.

The meeting concluded with the technical subcommittee reviewing what they would ask Jules Cohen to do.

Since that meeting, the FCC has issued another Report and Order. Broadcasters in the nation's largest television market are concerned about the means by which HDTV allocations will be made. More than anything, they seem to reject the notion of arbitrary or random assignments. Negotiated allocations would seem to be the best way to achieve fairness among the various licenses. If this is the procedure the FCC has in mind, then most TVAIC members will be happy. We eagerly await the FCC's actions in this area.

We are in the midst of a major painting of the broadcast mast and radomes at the World Trade Center. This work is expected to carry on throughout next summer.

If I can be of any further assistance, Dave, just call or write.

Sincerely,

EARL F. ARBUCKLE, III, P.E.
President

Appendix 1

Attendees at TVAIC Meeting of 4/8/92

NAME	Affiliation	Phone/FAX
James R. Baker	WABC-TV	(212) 456-3082/456-2290
George Kraus	WNJU-TV	(201) 288-5550/288-0129
Alan Cohen	WXTV-TV	(201) 348-2841/348-4104
Ernie Dachel	WNYC-TV	(212) 664-7706
Ed Knapp	WNYW-TV	(212) 452-3634/452-3969
Frank Graybill	WNET-TV	(212) 560-3506/582-3297
Jim Huste	WYNY-FM	(212) 237-2561/586-6889
Robert Barkey	WWOR-TV	(212) 524-0520
Joe Fedele	WCBS-TV	(212) 975-2408/975-4299
Earl Arbuckle	WPIX-TV	(212) 210-2555/986-4360

Andy Morris of WNBC-TV was absent from the meeting, but briefed on the discussions by Earl Arbuckle at a later time.

KDOC·TV·56
1730 South Clementine Street • Anaheim, CA 92802
(714) 999-5000 • (213) 464-6111
FAX:
(714) 999-1218 • (213) 385-5326

June 26, 1992

David Folsom
Director of Engineering
WCNC-TV
1001 Woodridge Center Drive
Charlotte, NC 28217-1901

Dear Mr. Folsom,

As a Chief Engineer of a television station in the Los Angeles area, I will be attending the local group Advisory Committee meeting hosted by Bill Landers at *KCET* next month. I have also read with great interest your communication with Mr. Landers and exhibits, which Bill was so kind to reproduce.

This week our management was formulating reply comments to the *2nd Report and Order* and *Notice of Proposed Rulemaking*. I perceive you might like some of our thinking on the issues of spectrum allocation. Most of this data is in rough form, but I hope the solutions and concepts will be of interest to you.

By way of introduction, you already know that I am a Chief Engineer. I am also a circuit designer, and PC layout engineer. More significantly, I have several Arts degrees including a Master of Arts with honors in Telecommunications concentrating in cinematography and communication theory. In my opinion, the establishment of any new media especially in regard to its technology and regulation, is most prone to failure at inception. Flawed systems only get worse. I have some serious reservations as to the Commission's concept of what the TV world will be like in 20 years. Some thought ought to be given to a combined medium and high resolution telecast concept. Introduction of high resolution, forever changes the character of the media and will, in my opinion, prove to be less suitable for many applications than NTSC. It is <u>not</u> always the case that *"more is better"*.

At *KDOC* we are especially concerned with the ATV conversion process in this major metro market. Our comments address the fear that not all stations will be able to obtain a revision channel. We profoundly believe that no station ought to be put out of business especially if there is an alternative. Attached you will find a specific alternative for channel assignments utilizing a non-exotic, non-disruptive, and available technology. The attached data will describe a cross-polarized band plan for congested markets customized for Los Angeles. Compare this to a best case scenario for ATV channels selected in the normal manner but with taboos lifted. Draw your own conclusions.

Our local area meeting ought to be interesting. Thank you for spuring us into action.

Sincerely,

Roger W. Knipp
Chief Engineer

enc: several

A PROPOSAL

MAXIMUM SERVICE BAND PLAN FOR UHF DUAL CONTIGUOUS ALLOTMENT

Recent rulemaking proposed for broadcast TV standards conversion is confusing. It appears now that the eventual HDTV system will be digital in nature with a maximum of 6 mHz of spectrum per channel. We can all relate to that, but new technologies may make possible 1 to 3 mHz HDTV bandwidths.

According to the proposed rulemaking, each existing station would have an ATV channel available for use. With simulcasting for the period of several years, the public would have an opportunity to purchase and install new HDTV receivers. Eventually, perhaps on a black Monday, the transmission of NTSC in this market would end. There are still problems with this scenario, leaving more questions than answers.

1. Will there be enough spectrum in this market for every existing station to obtain a simulcast ATV channel?

2. Will the UHF taboos be lifted, or just suspended to accommodate ATV?

3. Will the same cut-off date apply to affluent and economically depressed areas of the country.

4. Is this a recipe for battles in Congress and the courts?

5. Should any broadcaster (or viewer) invest in any new NTSC equipment?

6. What is the likelihood that VHF telecast channels (2 - 13) will be reassigned to other services?

The Los Angeles metro TV market presents some serious problems with regard to the allocation of spectrum in order to accommodate the transitional plan the Commission appears to be proposing. So many times, we tolerate the spectral mess that we inherit simply because politicians rather than engineers developed the plan. The frequency feeding frenzy which is about to be unleashed in markets this size, will doubtlessly end in spectral strudel. Application of a little concern over just how big a mess we expect to end up with, may just save our industry.

Our station is on record with the FCC in opposition to replacement of NTSC by ATV. We believe that there is a continuing need for NTSC (or an enhanced version) as well as a new high-definition format. Our heritage and history is on NTSC, and the public will not be ready to throw out the TV sets they just purchased. Congress, we predict will not allow the Commission to end NTSC transmission to the public. Congress would be right, although perhaps for the wrong reasons. Politicians know well that they must do nothing which affects the public's automobile freedom or TV reception. The right reason to retain NTSC is that ATV and NTSC are in fact separate and distinct media. It would be far better to think in terms of a future of ATV **and** NTSC rather than just ATV.

NTSC is characterized as a *cold* medium by Marshall McLuhen, in his book *"Understanding Media."* By this distinction he views our current TV system is something that the viewer can watch in a detached mode. The viewer knows that the tiny, blue, 6-inch figures on the screen are not real. The quality of the picture warns the brain that the light show represents no personal threat. Little emotion is expended on a cold medium, and we know that the heart rate drops when we watch television regardless of the program material.

High definition TV, on the other hand, is more like motion pictures in terms of picture and sound quality. Motion picture film is a hot medium. In this context, the theater walls are forgotten, and the total real experience of the film can reach out and grab our emotions. Our hearts will race, we will feel fear, elation, compassion, hate, love, excitement and serenity. The qualitative leap in picture and sound fidelity will transform the medium of television to a state unrecognizable to current TV programmers.

The capabilities of HDTV to carry on the traditions of NTSC programming are very limited. The things which "worked" on NTSC may not work at all on HDTV. The networks attempting to utilize a hot medium will discover a multitude of new problems. How, for example, are you going to create sufficient *heat* to make the TV experience *real* while breaking away for commercials every 15 minutes? You see, spot commercials become a real irritation and are less effective on a *hot* medium. The new reality-experience of HDTV dramatic programs is broken when interrupted for commercials. In order to make ATV a success, it must be programed *hot*, and not allowed to cool off.

For these reasons we conclude that simulcasting is unlikely to be in the best public interest. Stations ought to be permitted to program their ATV and NTSC channels separately in order to take advantage of the strengths and best characteristics of each medium. Certain types of broadcast material are better cold like news, others hot like movies. We believe that experience will show that there is and will continue to be a need for both. We ought to develop a plan which accommodates a continuation of NTSC and a parallel implementation of ATV.

In Los Angeles that would be a lot of spectrum squeezing. But let's set the problem before engineers and see if a plan suggests itself. Here is a list of appropriate criteria:

1. All currently licensed stations should have an ATV channel available.
2. All currently licensed stations should have or be assigned a continuing NTSC channel.
3. VHF stations should get a logical and priority assignment of UHF ATV channels and a reserved NTSC UHF spectrum slot.
4. The channels should be assigned in a logical and contiguous manner.
5. If possible, approximately 28 channels of ATV and 28 channels of NTSC should be provided for, with all channels usable in the market.
6. Provide for the least disruption of existing UHF services.
7. Include all telecasting services on UHF, providing for eventual reassignment of VHF (2-13) to other services.
8. Provide for additional open, new (not yet on air), and LPTV.
9. Give very favorable channel locations to non-commercial stations.
10. Devise a method to give maximum channel loading with minimum interference potential.

THE PLAN

From an engineer's point of view, the task may be accomplished with the technology of assigned alternate channel, vertical and horizontal pole radiation patterns. This plan has been proven effective in conserving spectrum and reducing interference from communication satellites. The same scheme could be accomplished in UHF-TV. Receive antennas could be aligned with horizontal elements for reception of existing NTSC stations. In Los Angeles all even UHF channels would utilize horizontal radiation, and all odd channels (ATV assignments) would be vertical. No circular or elliptical would be permitted. In an adjacent market, like San Diego, the opposite plan could be used to cross pole overlapping co-channel contours.

The plan would work best if all the transmitters of each mode in a particular service were co-located. The common antenna farm in Los Angeles is Mt. Wilson, for high-power NTSC. The Common site for all relatively low power, interleaved ATV transmitters could be Santiago. Directional receive antennas in almost all receive locations would be directed away from the ATV sources of interference. The UHF taboos would be largely eliminated, but that should happen anyway. Receiver specifications would have to be enhanced to reduce spurious responses, but most modern NTSC receivers and antennas should perform well with the plan. Digital ATV transmit and receive antennas would most likely be *non-directional* or only slightly directional to avoid group delay distortions, thus making vertical radiation of ATV in this market very desirable.

The plan appears to be the least disruptive to the existing services (at least in LA). It is an interleaving plan which enables all horizontal (even channel number) stations to continue their operations on NTSC and the ATV channels to be set on the odd channels. For ease of recognition the ATV channels would be designated as A1 (currently channel 15) through A28 (currently channel 69). This would reduce public confusion and promotional costs. Eventually, maybe 20 years from now, the VHF spectrum could be reassigned to land-mobile or other services, at which time UHF channels held in reserve for former VHF operators could be utilized.

While stations and services are assigned (as a trial) to the various channel positions, it is by no means set. The intention is to demonstrate the logic of the basic assignment and to promote discussion. The Pay TV type services suggested in the plan only hint at a possible franchise affiliation of well known types. The digitally encoded services could easily be added to ATV decoding systems. The pay movie services will best provide the program material most advantageous to a *hot* ATV medium.

It is in the public interest to adopt a logical plan which would insure the greatest number of channels in both formats. Los Angeles municipal services operating in the current UHF channel 16 would require relocation within the provisions of the plan, perhaps eventually to VHF.

There is the challenge. If it can work in Los Angeles, it can work in any smaller market, and the spectrum overfloweth with channels. Without a plan someone is going to miss out, and the courts overfloweth. Let's make a plan, not only because our stations and our industry is at stake, but because this may be the best deal any of us is ever going to get.

Attachments: Plan, Dual Interleaved Allotment

ALTERNATE UHF-TV, DUAL STANDARD, DUAL POLARIZATION ALLOTMENT
SUGGESTED FOR LOS ANGELES METRO AREA {INTERMIX ATV}

CHANNEL#	POL	DESIG	SERVICE	PRIORITY ASSIGN	LOS ANGELES
14	H	CH 14	NTSC	AVAILABLE	CNN BDCST
15	V	A1	ATV	PRIMARY ETV	KCET-A
16	H	CH 16	NTSC	(CH-2 RESERVED)	KCBS
17	V	A2	ATV	VHF CH. 2	KCBS-A
18	H	CH 18	NTSC	EXISTING (18)	KSCI
19	V	A3	ATV	UHF REASSIGN	KOCE-A
20	H	CH 20	NTSC	(CH-4 RESERVED)	KNBC
21	V	A4	ATV	VHF CH. 4	KNBC-A
22	H	CH 22	NTSC	EXISTING (22)	KWHY
23	V	A5	ATV	VHF CH. 5	KTLA-A
24	H	CH 24	NTSC	EXISTING (24)	KVCR
25	V	A6	ATV	UHF REASSIGN	KTBN-A
26	H	CH 26	NTSC	(CH-5 RESERVED)	KTLA
27	V	A7	ATV	VHF CH. 7	KABC-A
28	H	CH 28	NTSC	EXISTING (28)	KCET
29	V	A8	ATV	UHF REASSIGN	KMEX-A
30	H	CH 30	NTSC	EXISTING (30)	KAGL
31	V	A9	ATV	VHF CH. 9	KCAL-A
32	H	CH 32	NTSC	(CH-7 RESERVED)	KABC
33	V	A10	ATV	UHF REASSIGN	KDOC-A
34	H	CH 34	NTSC	EXISTING (34)	KMEX
35	V	A11	ATV	VHF CH. 11	KTTV-A
36	H	CH 36	NTSC	(CH-9 RESERVED)	KCAL
37	V	A12	ATV	UHF REASSIGN	KLCS-A
38	H	CH 38	NTSC	(CH-11 RESERVED)	KTTV
39	V	A13	ATV	VHF CH. 13	KCOP-A
40	H	CH 40	NTSC	EXISTING (40)	KTBN
41	V	A14	ATV	UHF REASSIGN	KVEA-A
42	H	CH 42	NTSC	(CH-13 RESERVED)	KCOP
43	V	A15	ATV	UHF REASSIGN	KWHY-A
44	H	CH 44	NTSC	NEW (44)	NEW
45	V	A16	ATV	UHF REASSIGN	KHSC-A
46	H	CH 46	NTSC	EXISTING (46)	KHSC
47	V	A17	ATV	UHF REASSIGN	KVCR-A
48	H	CH 48	NTSC	AVAILABLE	(LPTV)
49	V	A18	ATV	UHF REASSIGN	KRCA-A
50	H	CH 50	NTSC	EXISTING (50)	KOCE
51	V	A19	ATV	UHF REASSIGN	KSCI-A
52	H	CH 52	NTSC	EXISTING (52)	KVEA
53	V	A20	ATV	UHF REASSIGN	--
54	H	CH 54	NTSC	NEW (54)	NEW
55	V	A21	ATV	AVAILABLE	HBO ENC
56	H	CH 56	NTSC	EXISTING (56)	KDOC
57	V	A22	ATV	AVAILABLE	DISNEY ENC
58	H	CH 58	NTSC	EXISTING (58)	KLCS
59	V	A23	ATV	AVAILABLE	PAY PER VIEW
60	H	CH 60	NTSC	AVAILABLE	(LPTV)
61	V	A24	ATV	AVAILABLE	SHOWTIME
62	H	CH 62	NTSC	EXISITNG (62)	KRCA
63	V	A25	ATV	AVAILABLE	A&E ENCODED
64	H	CH 64	NTSC	LPTV	(LPTV)
65	V	A26	ATV	AVAILABLE	MTV ENCODED
66	H	CH 66	NTSC	LPTV	(LPTV)
67	V	A27	ATV	AVAILABLE	SPORTS ENC
68	H	CH 68	NTSC	NEW (68)	NEW
69	V	A28	ATV	AVAILABLE	(LP-ATV)

ABSOLUTE MAXIMUM ATV ASSIGNMENT SCHEDULE
PROJECTED FOR LOS ANGELES METRO AREA

CHANNEL#	AVAILABLE STATUS		
14	CLEAR		
-15	AVAILABLE ATV 1		VHF-1
16	2-WAY		
17	CLEAR		
18	---EXISTING (18)------	KSCI	
19	CLEAR		
-20	AVAILABLE ATV 2		VHF-2
21	CLEAR		
22	---EXISTING (22)------	KWHY	
23	CLEAR		
24	---EXISTING (24)------	KVCR	
25	CLEAR		
-26	AVAILABLE ATV 3		VHF-3
27	CLEAR		
28	---EXISTING (28)------	KCET	
29	CLEAR		
30	---EXISTING (30)------	KAGL	
31	CLEAR		
-32	AVAILABLE ATV 4		VHF-4
33	CLEAR		
34	---EXISTING (34)------	KMEX	
35	CLEAR		
-36	AVAILABLE ATV 5		VHF-5
37	CLEAR		
-38	AVAILABLE ATV 6		VHF-6
39	CLEAR		
40	---EXISTING (40)------	KTBN	
41	CLEAR		
-42	AVAILABLE ATV 7		VHF-7
43	CLEAR		
44	---NTSC--------NEW (44)		
45	CLEAR		
46	---EXISTING (46)------	KHSC	
47	CLEAR		
-48	AVAILABLE ATV 8		EDUCATIONAL
49	CLEAR		
50	---EXISTING (50)------	KOCE	
51	CLEAR		
52	---EXISTING (52)------	KVEA	
53	CLEAR		
54	---NTSC--------- NEW (54)		
55	CLEAR		
56	---EXISTING (56)------	KDOC	
57	CLEAR		
58	---EXISTING (58)------	KLCS	
59	CLEAR		
-60	AVAILABLE ATV 9		UHF # 1
61	CLEAR		
62	---EXISITNG (62)------	KRCA	
63	CLEAR		
-64	AVAILABLE ATV 10		UHF # 2
65	CLEAR		
-66	AVAILABLE ATV 11		UHF # 3
67	CLEAR		
-68	---NTSC--------- NEW (68) (OR ATV 12)		(UHF # 4)
69	CLEAR		

COMMENTS OF GOLDEN ORANGE BROADCASTING, INC.

TO SECOND REPORT AND ORDER/FURTHER NOTICE OF PROPOSED RULE MAKING
Adopted April 9, 1992

COMMENTS on II, A, 9:

Golden Orange, as a licensee in the Los Angeles metro area, believes that allocation of revision ATV channels to all current licensees is impossible given the standards and procedures of this Report and Order. Addition of ATV service channels, however temporary, in the Los Angeles market can only be achieved by the total elimination of UHF taboos. The largest number of channels which could be added in the market in the absence of the taboos, according to our engineers is twelve (12) ATV channels (see exhibit A), unless the option of alternate channel cross-polarization is used.

Under the Commission's proposed allotment plan, to accommodate all existing signals, a grand total of twenty (20) stations which are already on the air must receive an assigned ATV channel. Four (4) additional permitees are not yet on the air and may also require an ATV channel. The number of stations requiring an ATV channel, unfortunately, far exceeds the maximum number available in the Los Angeles Market. Accordingly, the Commission must concede that at least eight (8) and possibly twelve (12) stations will not be afforded an ATV revision channel.

The condition of *insufficient spectrum* as feared in section nine appears to be an obvious conclusion in this and other major markets. Even in the face of up to half the stations in this market being excluded from the conversion process, all existing (initially eligible) stations ought to have equal rights and access.

1. All existing licensees ought to have equal access to the ATV conversion process.

2. All existing licensees ought to have the right to continue to serve the public in their communities of license, without fear of eventually losing the station simply because a simulcast channel was unavailable.

3. All existing licensees ought to be reasonably protected from interference from new ATV channels within their communities of license.

4. All existing licensees which are unable for whatever reason to take advantage of an ATV revision channel, must at least be provided an alternate opportunity for conversion to ATV on their own channel by the final *conversion date*.

COMMENTS on II, F, 35:

The ATV assignment process issued in the anticipated Final Table of Allotments cannot provide an acceptable basis of channel pairing in the Los Angeles metro market. Without alternate technology, the spectrum can accommodate only half the initially eligible broadcasters who might wish to convert to ATV. A negotiated settlement as to which stations receive a conversion channel and which do not is highly unlikely in our opinion. The assignment of an arbitrator to select the stations which acquire a revision channel appears to be the only solution to such an obvious spectral shortfall as anticipated in Los Angles.

Joint Broadcasters were rightfully concerned that a stampede for channels would be the result of a first-come-first-served policy. In gross shortfall markets, without early arbitration a stampede would be unavoidable. A reasonable and competitive conversion process being necessary to the

continued business viability of any station interested in the future, an ATV assignment is vital. Especially if the alternative is eventual *sunset*, and ATV assignment is vital. Golden Orange feels it is unacceptable to put ourselves out of business or to put anyone else out of business, when there are other options.

Golden Orange disagrees with the Commission conclusion that the stations will not file for an ATV allotment until they are ready to construct in a shortfall market. Only stations which are guaranteed an ATV frequency will be free to arrange all the construction details before filing. In shortfall markets the priorities are reversed, by filing first, details later. Golden Orange recommends that the Commission identify each market where a shortfall of frequencies for ATV service is anticipated, and provide an arbitrator to establish which stations receive ATV channels. We do not believe that all the station managers in the Los Angeles Metro area can negotiate workable answers to the allotment question short of violence. Regardless of the process, in any shortfall market, the two year application period may be insufficient given the additional time required for arbitration.

COMMENTS on V. 58

Golden Orange agrees that the first two years of ATV programming be totally flexible in order to gain experience with the new media. Rather than a phased in requirement for simulcasting in following years, however, Golden Orange continues to recommend that the results of the initial experimentation dictate the appropriate service of the public interest. Programming a station is actually a continuous experiment. Golden Orange has little doubt that programs which will "work" on HDTV may not "work" on NTSC. The simulcast requirement, therefore, may compel a broadcaster to air programs unsuitable for the media or audience. A 100 percent simulcast requirement four years after the construction period, curtails the flexibility needed to develop the programming dynamics essential to the success of the media.

Several stations in major markets find themselves at a competitive disadvantage due in part to their UHF dial positions. In order for these stations to purchase programs, they must wait for the major producers and networks to air the "first run", then the major VHF independents to air the "second run". When the UHF station first has access to such material, it is a "third run" usually ten (10) years later.

If this scenario holds true for high-definition programming, such stations cannot have access to high-definition productions until very late in the conversion process. The requirement for 100 percent simulcasting for several years prior to such a station even having access to high-definition materials is without merit. Golden Orange engineers see little benefit to up-convert a medium definition picture to a quasi-high definition picture just to satisfy an overly restrictive regulation. Materials lacking in picture definition will not gain in quality in the process of digital up-conversion. A simulcast requirement which is mainly tied to NTSC as the original source, cannot be in the public interest or advance the ATV conversion timetable. Such a station ought to continue its medium resolution programming on NTSC and experiment with local and live HDTV programming on the ATV channel for at least some major portion of the day.

IS/WP2-0211
24 JUN 92

June 22, 1992

To: Merrill Weiss
Acting Chairman ISWP-2

Dear Merrill,

The attached is a further written response of Zenith/AT&T to the questions and follow-ups asked by IS/WP-2 under dates of 2/16/92 and 3/17/92. It augments, and where there is conflict, it supercedes our previous responses.

We will try to respond to the additional 6/12/92 questions by next week.

Sincerely,

Ronald Lee

General

1. Is extensibility built into your system? If so, are there extensions to your system that require particular consideration during the initial (full, but not extended) implementation? What are the considerations that must be addressed as part of the initial implementation?

   Our 3/6/92 answer discusses possible extensions of performance of video and audio television services, variously implementable at the transmitter or the receiver without impacting or making special provisions in first generation receivers.

   The data structure is particular to DSC-HDTV, and is not designed as a general communication system. However, in the DSC-HDTV proposal, no particular ancillary data partitioning has been proposed. If the initial implementation of DSC-HDTV defines ancillary data as flexible packets with headers, new ancillary data services can be introduced later.

   In regards to program headers/descriptors such as the ones under consideration in the SMPTE, they can be incorporated into the DSC-HDTV global data packets with some slight modification to the global data format. Of course this would have to be defined as part of standardization.

2. How long following an advisory Committee recommendation of your system will the detailed technical information necessary for the setting of standards and for the design and manufacture of both professional and consumer products be available?

   Proponent information necessary for both standards activity and for support of product design and manufacture will probably require three months to compile. We expect actual standards development for any of the systems, which will be a significant additional effort on the part of industry experts aided by the proponent, may take an additional three months.

3. What provisions have you made for communicating information sufficient for design and manufacture to manufacturers of consumer and professional equipment? Do you have a program for providing direct support to help get such organizations up and running with your system?

See 3/6/92 response- We expect to meet the needs of industry, consistent with information availability discussed in 2 above.

Communication plans will include, but not be limited to, full detailed technical information and diagrams, seminars as appropriate.

The establishment of a program to provide direct support is premature until there is an unambiguous system selection. Zenith and AT&T both have had a long history of providing appropriate and adequate technical information to the various industry entities; e.g., BTSC stereo.

4. What arrangements have you made with integrated circuit vendors for supplying chips for your system? What availability of ICs do you anticipate for other manufacturers of both consumer and professional equipment?

See 3/6/92 response. AT&T Microelectronics expects to make receiver chipsets, (not just information) available to consumer product manufacturers and appropriate IC's available to professional equipment manufacturers on a timely basis.

5. What is your expectation for the time of introduction of your system following the FCC decision? What point in the decision-making process (e.g. Advisory Committee Final Report, FCC Report & Order, completion of Field Test) will be the trigger for you to begin implementation in earnest? Do you have any suggestions for possible head starts in any areas to shorten the time to introduction?

As previously stated, the trigger for implementation will be an unambiguous selection of the DSC-HDTV system. This may be as early as

the selection of a system for field test, depending of course on how unambiguous that selection and the underlying data are.

Per our current timing estimate, if the DSC-HDTV system is selected by the FCC in mid-1993, HDTV receivers and broadcast equipment should begin to be available by late 1995. We look to 1% household penetration two to three years later.

Broadcast

1. What are the transmission power levels (ERP) required for the system for coverage equal to NTSC? Please specify for both low and high VHF and for UHF. Are there any power variations across the UHF band? Are any special transmitter or antenna characteristics required?

   See response of 3/6/92.

2. What signal form is anticipated for use in the studio for program origination for your system? Are there different levels of quality and cost possible? If so, what are they and how are they accomplished? What are the tradeoffs? What level of performance is achieved by each?

   See response of 3/6/92.

   An alternative to the analog signal for production where the highest quality is required, is a 200 Mb/s two-dimensional(2D) compressed version of the same signal. This signal could be used in its compressed form for scene cuts. For other image manipulation (e.g. keys) this signal will have to be decoded to Y,U,V. It is not necessary or desirable to decode the compressed signal to analog components; multiple analog filtering will degrade the image. Multiple digital-only encode/decode concatenations at 200 Mb/s is expected to be virtually transparent.

   The possibility of doing additional production processing on a compressed signal is still under study. While the 200 Mb/s signal may not support all studio operations without decoding, it provides for convenient single wire transport and switching.

3. What signal form is anticipated for use in distribution to Network affiliates and/or to cable headends? Have you anticipated both satellite and terrestrial common carrier delivery? Have these been tested experimentally?

For a "minimal television station", we have proposed a 21.5 Mb/s signal distribution (see response to block diagram submitted to IS/WP2). This signal is also appropriate for distribution to cable headends where pass-through is the primary requirement. Also see 3/6/92 response.

For a "transitional television station" where only a limited amount of post production is usually required, we have proposed a 100 Mb/s signal (2D compressed) which can be sent over one satellite channel (see response to block diagram submitted to IS/WP2).

These two rates would have to be supported by both satellite and common carrier distribution. Neither have been tested experimentally.

4. What forms of further production are possible using the signal delivered to affiliates and headends?

a) cut into the signal
b) key into the signal
c) full image manipulation

As previously stated, the fully compressed 21.5 Mb/s signal contains interframe motion compensation and can only support cuts into the signal. If this is done randomly, the artifact would appear similar to a channel change, with reacquisition in a few frames. We believe, as discussed 3/25/92, clean cuts can be made on fades to black and at scene changes.

For a two dimensional delivery (see answers to Broadcast 2 and 3 above) cuts can be made at any time; other processing appears now to require decoding at least to digital components.

5. If the signal delivered to affiliates/headends must be

fully decoded for further production, in the forms listed in 3 above, how many times can this be done with acceptable quality in the resulting picture? Have you tested this experimentally?

Decode/encode concatenation is most tolerant when decoded only to digital components.

Concatenation of the 21.5 Mb/s signal can leave artifacts which are image content (hence source content) dependent - artifacts are more likely as the image complexity increases in all digital systems and will depend on the algorithm used.

Encode/decode concatenation of the 100 Mb/s signal is expected to be virtually transparent to the 21.5 Mb/s transmission. Several concatenations should be possible with no noticeable artifacts after the 21.5 Mb/s encode/decode.

Studies are being conducted with computer simulations.

6. Is it possible to carry the ATV signals and NTSC signals together on a single microwave channel, as for Studio-to-Transmitter Links (STLs) and similar circuits? If so, what is the required bandwidth?

See 3/6/92 response.

7. What signal form is anticipated for contribution circuits for production? Are different quality levels provided? Have you considered both satellite and terrestrial common carrier delivery? Assuming the production processes listed in 3 above, how many times through the signal form can an image go while retaining acceptable production quality in the resulting picture? Have you tested this experimentally?

The answers to both original and follow-up questions are substantially given in the answers above especially in Broadcast 2, 3, 4, 5.

Cable

1. What provisions are made for conditional access without

decoding the signal? Is partial decoding required? How complex is the equipment required to accomplish these functions?

Conditional access, that is insertion and capture of address/enable instructions, can be done at any point without decompressing the fully compressed 21.5 Mb/s signal. Channel synchronization, clocks and general timing information is neither video encoded nor encrypted when the program is encrypted so it can be withheld. Address/enable instructions can be added to this data stream using simple equipment.

Encryption of the program content can take many forms, one of which is the "stream-cipher" process referred to in the 3/6/92 response. This process adds a known (but secret) pseudo-random number series to the message (program) data stream. Decrypting is the complementary process. Either can be carried out at any point, origination or down stream, with simple equipment and without decompressing the 21.5 Mb/s (or any other) signal.

2-5. The answers to these Cable questions can be found, as before, under the corresponding Broadcast questions.

Common Carrier

1. What form of signal do you propose for transmission over terrestrial common carrier links?

See BROADCAST Section, Question 3.

2. Are the SONET bit rates assumed the correct choices?

Since the basic SONET modular rate is 51.84 Mb/s, two fully compressed 21.5 Mb/s data streams can be accommodated.

For the 100 Mb/s 2D compressed format, a SONET STS-2 rate of 103.68 Mb/s can be used.

For the 200 Mb/s 2D compressed format, a SONET STS-4 rate of 207.36 can be used.